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ABSTRACT

Development of new scales from test items usually requires several hundred cases in each of the defined groups. Application of multivariate techniques to existing test scales also encounters such problems as multicolinearity, combining ipsative with normative measures and ordinal with equal interval scales, differential prediction, and communication of multiple scale scores to untrained users. To meet these problems a method was devised whereby multiple scales from different tests could be treated as items, yielding new scales with high validities (several in the .90's) and normal to negligible shrinkage, even when developed on relatively small groups. The results were well received by cadets, counselors, and educators, and for 2 years have been incorporated as a regular part of the cadet academic counseling program. The statistical development procedures and the results are illustrated using the Strong-Campbell Interest Inventory. (Author)

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A NEW APPROACH TO DEVELOPING TEST SCALES[1]

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ABSTRACT

Development of new scales from test items usually requires several hundred cases in each of the defined groups. Application of multivariate techniques to existing test scales also encounters such problems as multicolinearity, combining ipsative with normative measures and ordinal with equal interval scales, differential prediction and communication of multiple scale scores to untrained users. To meet these problems a method was devised whereby multiple scales from different tests could be treated as items, yielding new scales with high validities (several in the .90's) and normal to negligible shrinkage, even when developed on relatively small groups. The results were well-received by cadets, counselors, and educators, and for two years have been incorporated as a regular part of the cadet academic counseling program. The statistical development procedures and the results are illustrated using the Strong-Campbell Interest Inventory based academic field "Interest Profile Similarity Sclaes."

PREFACE

The former title was "New Scales from Old." It was changed because it seemed to be too "cute" and connoted only one of the possible applications. However, it is a succinct presentation of one major application of the concept. Many well-developed standardized tests, such as the Minnesota Multiphasic Personality Inventory and the Strong-Campbell Interest Inventory (SCII), have so many scales that commercial computer scoring services are almost essential, even if the Keys were available. Adding new scales based on new item keys for other criterion groups or for special purposes commonly is impractical, and always requires a large number of cases.

Even when enough cases are available in new criterion groups for use of the usual multivariate techniques, some very difficult problems often are encountered. When independent variables from several sources are to be combined, the different measures may be ipsative or normative, and may have nominative, ordinal, equal interval, and occasionally even ratio-type scales. Multicolinearity of the standard scales commonly results in failure to make full use

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[1] Any conclusions in this report are not to be construed as official U.S. Military Academy or Department of the Army positions unless so designated by other authorized documents.

of the information available in the data, since only one of several correlated scales may be used. This results in loss of precision, reproducibility, and validity.

If, in effect, scales are treated as test items, multicolinearity of scales could become an asset. When selecting items for keying to form one scale, desired multicolinearity is handled by merely adding together the scores from each item, giving each response the desired weight. This most commonly is a weight of one, but Claudy (1978) recently showed that a biserial weighting procedure is superior. Treating standard scales in much the same way as items, and capitalizing on refinements thus possible, results in a practical method for developing new special purpose scales from the regular scales. This method has now been applied, refined, validated, and cross-validated, three times at USMA--the Academic Years of 1978-79, 1979-80, and 1980-81, and four reports prepared (Bridges: 1979, 1980, and 1981; Shuford: 1980).

METHOD

Overview of New Scale Development

a. Compute, for each variable (such as the standard scale provided by scoring service), the point-biserial correlation with membership vice nonmembership in the criterion group.

b. Select scales with highly significant correlations (usually the 30 to 60 most significant); use the z-transformation value for each correlation as the weight (W) to be assigned to scores on that standard scale (n), and sum their products to obtain the new scale raw score (NSRSC).

$$NSRSC = \Sigma W_n X_n$$

c. Compute the raw scores and their mean and standard deviation for the criterion scaling group.

d. Use these to determine the desired New Scale standard score equation,

$$NS\ Standard\ Score = 10^* (NSRSC - Mean\ NSRSC)/SD\ NSRSC$$

Variables

a. The 176 scales from the Strong-Campbell Interest Inventory (SCII) (Campbell, 1977). These included the Holland Theme Scales, the Basic Interest Scales, the Occupational Scales, the Academic-Orientation Scale, the Introversion-Extroversion Scales, and the administrative scales. The SCII was selected because of its preeminence as the most extensively researched and normed measure of an individual's pattern in various types of interests. This is the basic instrument used in all the projects.

b. The 36 value Scales from the Rokeach Value Survey (Rokeach, 1973). These short, easy to give, and well-researched measures of an individual's systems of Instrumental and Terminal Values, previously had been given to the USMA Classes of 1978 and '79 in connection with other research (Bridges, 1973).

c. High School Rank Score. The scaled score based on cadet's rank at graduation from high school was used as an independent variable in the first project.

d. The cadets' academic averages, by department, on the courses they had taken at USMA during their first three terms (first study only).

e. Each cadet's final cumulative academic average on the courses required for their academic area of concentration (in all three projects), and for their field of study (in the last two projects). In the first project, each of the four Area QPA's at graduation were used also as dependent variables for cadets in that area.

f. A dummy variable for graduation in each area or field. Each cadet was scored "1" if graduating in the given area, or field, and "0" if graduating in any other area or field. Only the four areas of concentration (Applied Science and Engineering; Basic Science; Humanities; and National Security and Public Affairs) were used in the first project. Fields for which there were 25 or more graduating cadets were used also as dummy variables for the other two projects. All of the foreign language fields were also grouped together as another dummy variable. The dummy variables were the dependent variables.

g. Two experimental dummy variables suggested by Biglan's model (1973). For one dummy variable, cadets in either of the established paradigm ("Physical Science") areas received a score of "0." Those in "Nonphysical Science" areas, a score of "1." For the other dummy variable, cadets in the more applied areas (AS & E and NS & PA) were scored "1," those in the "purer," more basic areas (Basic Science and Humanities) were scored "0" (in second study).

Samples

The total samples included all cadets in the respective graduating classes. The numbers varied in the successive analyses due to missing data on one or more of the variables involved.

	Class of 1978	Class of 1979	Class of 1980
Total	844	843	909
Applied Sciences	299	308	312
Basic Sciences	79	90	137
Humanities	95	62	80
NS & PA	335	333	294
Management (Interdisciplinary)	36	50	86

Procedure

a. The AY 78-79 study.

(1) The steps summarized in above overview were used to develop three complete sets of scales to discriminatingly characterize cadets who graduated in each of the four academic areas of concentration from all other cadets. The equations for the SCII Occupation Interest-based scales included weights only for point-biserial correlations significant at the .001 level. A few correlations with lower significance levels were used for the SCII-based General Interest scales and for the Rokeach Value-based scales. The three sets of raw scores were converted to standard scores with a mean of 50 and a standard deviation of 10, for cadets who had graduated in the upper half of the class on their respective Area QPA's. These were called Area Compatibility Scores, though they did not include direct measures of the cadet's differential abilities for the courses in each area.

(2) Using the same procedure, four sets of raw score equations were likewise developed with earned area QPA's as criteria. The set for each area included an interest pattern raw score, a Rokeach values pattern raw score, and an early USMA academic performance raw score. The three area raw scores and high school rank score were combined into four regression equations that yielded the most accurate prediction of each of the four Area QPA's. These were used to produce for each group Area Predicted QPA Scores, scaled to a mean of 50 and a standard deviation of 10 for cadets in the relevant area.

(3) The equations for the new scales developed on portions of the Class of 1978 were used to compute area compatibility scores and four predictive area QPA's for the entire Class of 1978 and, for cross-validation, also for the Class of 1979. Since the compatibility scores were for cadets' guidance in choosing an area of study, distributions of these scores for cadets in each area were more important than correlations as validity information for these scores. These data were tabled for cadets in each half on their Area QPA.

(4) A simplified computer printout, listing the cadet's compatibility scores for each area, was provided to a sample of company academic counselors to obtain experience in their delivery and use.

(5) To investigate the extent to which cadets currently were graduating in areas closely conforming to their pattern of interests, values, and academic abilities, and also to determine the dimensional structure of the areas and its conformance to Biglan's (1973) model, a discriminant analysis was performed with the four area predicted QPA's as independent variables and the four areas as groups.

b. The AY 79-80 Study.

(1) The independent variables were limited to those from the SCII. Cadets graduating in the Classes of 1978 and 1979 were combined. To the dependent variables were added the 21 fields of study having 25 or more cases. In addition, cadets in the seven foreign languages were grouped together.

(2) The 21 field of study, and the four Area of Concentration, Interest Profile Similarity Scales were developed and reported for all cadets in the Class of 1982. The computer produced profile was used as desired by the Academic Counselors during their guidance sessions with their cadets.

(3) The counselor's responses to a questionnaire on all aspects of the Academic Guidance Program were obtained, analyzed, and reported (see Bridges, 1980).

c. The AY 80-81 Study.

(1) The graduating cadets in 1978, 1979, and 1980 were combined by area and field of study. Thus, it was possible to add four more fields of study, and refine the few field of study IPSS scales that, in comparisons with other closely related fields, had been found to yield interpretative anomalies the previous year. Cadets graduating in Physics and those in Computer Science had been found typically to have higher IPSS scores for mathematics than for their own field. Likewise, cadets in Literature typically had higher Foreign Language IPSS scores.

(2) The computer produced IPSS Profile was refined and used by the counselors with cadets in the Class of 1983 in choosing their field of study.

(3) Questionnaire surveys of both counselors and cadets were conducted for further refinements of the materials and information on their use provided in the Dean's Academic Counseling Program.

RESULTS AND DISCUSSION

The AY 78-79 Study

a. Validity. An exceedingly long paper would be required to present all of the relevant useful results. We can only hit some of the highlights. (Those interested in more details will find them in Bridges, 1979.) For guidance in choosing one of the four areas, the primary concern is the rank of each of the four areas relative to each other, rather than their absolute magnitude. Thus, one of the best indications of their validity is the extent to which cadets successful in an area tend to get higher scores for that area than for other areas. Cadets who graduated in each area were divided into two groups on the basis of their Quality Point Average at graduation, based only on the courses directly relevant to their Area. Table 1 presents the mean score made on sixteen scales by cadets who graduated in each half on their area specific QPA. Note that both groups of cadets in each area characteristically had a significantly higher average on their own area guidance scores than on the guidance scores for any of the other areas. However, cadets in the Low-Half Area QPA group for Basic Sciences tended to have about the same or slightly higher scores on the scales for Applied Sciences and Engineering than on the corresponding scales for their own area. Likewise, Low-Half Humanities area cadets had the same or slightly higher NS & PA scores than for Humanities. Incidentally, the regression equations used in developing the predicted Area QPA's indicate that most of the weight in the predictions of Area QPA goes to the cadet's previous academic performance, but the values

Table 1. Mean Area Profile Similarity Scale Standard Scores Made by Class of 1978 Cadets who Graduated in Each Half on their Area-Specific-Courses QPA

Group			Applied Sciences & Engineering Scores			Basic Sciences Scores			National Security & Public Affairs Scores			Humanities Area Scores		
Area	Half	N	AOISS	ARVSS	APQPASS	BOISS	BRVSS	BPQPASS	NOISS	NRVSS	NPQPASS	HOISS	HRVSS	HPQPASS
A	Lo ½	98	46	47	44	40	37	42	37	48	51	33	42	41
A	Hi ½	98	50	50	57	45	40	53	33	43	61	30	40	48
A	Total	196	48	49	51	43	38	47	35	46	56	31	41	45
B	Lo ½	33	47	47	46	45	44	43	34	44	52	33	42	43
B	Hi ½	34	47	42	66	49	50	59	31	45	69	34	43	56
B	Total	67	47	44	56	47	47	50	32	44	61	33	43	50
N	Lo ½	140	30	43	31	26	36	33	50	51	43	44	43	36
N	Hi ½	150	28	43	45	26	38	44	50	50	57	47	43	47
N	Total	290	29	43	38	26	37	38	50	50	50	46	43	41
H	Lo ½	40	28	44	39	27	36	38	49	48	50	48	45	40
H	Hi ½	39	28	41	54	31	39	52	47	50	65	50	50	56
H	Total	79	28	42	46	29	38	45	48	49	60	49	48	50
Total		632	36.6	44.8	45.6	33.8	38.6	43.3	43.3	48.0	54.3	40.3	42.8	44.3
		SD	14.7	10.5	12.8	14.5	11.2	10.2	12.1	9.7	10.6	12.2	10.9	9.2

and interest measures also contributed significantly to increased accuracy of predictions in all except the Basic Science Area. The percent of total prediction of actual Area QPA contributed by each measure is as follows:

Area	USMA Academic Performance	H.S. Rank	SCII Interest	Rokeach Values
Applied Science	71%	3%	14%	12%
Basic Science	88%	10%	-	2%
NSPA	77%	2%	11%	9%
Humanities	65%	-	21%	14%

b. Generalizability. Evidence on the generalizability to other classes of the scaling equations developed on a sample from the Class of 1978 is presented in Table 2. The percent of the total in each group ranged from about 10% for the Humanities Area groups to about 40% for NS & PA area groups. The common correction, dividing the point biserial by the maximum possible for that proportion, increases comparability between areas and between scores. Except for the Area scales based on the Rokeach Values data from administration to the Class of 1979 about three years previously, the scales demonstrated unusual resistance to shrinkage. These concurrent cross-validities are even more impressive when the small number of criterion group cases in some of the developmental analyses for the Basic Sciences and Humanities areas are considered.

c. Dimensional Structure of Curriculum. The Physical Science/Non-Physical Science Score results from combining the cadet's selected compatibility and Predicted Area QPA standard scores into one regression equation that most accurately distinguishes between cadets graduating in the Physical Science areas (Applied and Basic Science areas) and those graduating in the other areas (NSPA and Humanities). The corrected point-biserial correlation between the Physical Science/Non-Physical Science Scores and membership in the Physical Science Group or the Non-Physical Science group was .90 for the sample on which developed, and .85 for the total Class of 1978. When cross-validated by using the same equations for the Class of 1979, the correlation was .83, still remarkably high.

Discriminant analysis, using the four areas as groups, and the four area Predicting QPA Scaled Scores as independent variables, provides confirmation and further structure to be expected if the USMA curriculum conforms to the Biglan Model (Biglan, 1973). Pertinent results follow.

Independent Variables	Standard Discriminant Function Coefficients Func 1	Func 2	Func 3
APQPASS	+2.143	+1.177	+3.407
BPQPASS	+0.449	-0.945	-4.303
NPQPASS	-1.709	+0.803	-0.767
HPQPASS	-0.278	-1.840	+1.731
Canonical Correlation	.70	.31	.13
Relative % Variance	88%	10%	2%

Table 2: The Concurrent Validity and Cross-validity of the Seventeen Scores

Correlations between Each Set of Scores and their Criterion, for All Cadets Having Data on the Corresponding Pair of Variables, in the Total Class of 1978 (Maximum N = 733) and in the Class of 1979 (Maximum N = 741). For the dichotomous dummy variables, the obtained point biserial correlations have been corrected to same base.

	Class of 1978			Class of 1979		
SCORES	N	$r_{pt.\ bis.}$	r.	N	$r_{pt.\ bis.}$	r.
COMPOSITE A/B-N/H	255	(.674)	.853	307	(.652)	.826
PREDICTED AREA QPA'S						
APQPA	115	(-)	.860	187	(-)	.823
BPQPA	51	(-)	.933	31	(-)	.922
HPQPA	149	(-)	.866	161	(-)	.884
HPQPA	37	(-)	.916	24	(-)	.862
AREA COMPATIBILITY STANDARD SCORES SIMILARITY OF GENERAL INTERESTS						
AGISS	639	(.5274)	.685	688	(.4792)	.614
BGISS	632	(.3744)	.646	656	(.1298)	.282
NGISS	639	(.5256)	.528	648	(.4675)	.592
HGISS	706	(.3038)	.494	755	(.1832)	.331
SIMILARITY OF OCCUPATIONAL INTERESTS						
AOISS	563	(.4983)	.647	580	(.5633)	.722
BOISS	582	(.3182)	.549	588	(.1815)	.395-
NOISS	565	(.5050)	.643	587	(.5552)	.703
HOISS	604	(.2708)	.440	618	(.1534)	.279
SIMILARITY OF ROKEACH VALUES						
ARVSS	589	(.2505)	.325	559	(.0377)	.048
BRVSS	589	(.2581)	.445	559	(.0358)	.079
NRVSS	589	(.2177)	.277	559	(.1040)	.132
HRVSS	589	(.1718)	.279	559	(-.0043)	.008

The first function, which clearly is Biglan's Established Paradigm dimension, dominates, accounting for 88% of the explained variance between groups on the components of the predicted QPA's. The second function conforms to his "Applied Science--Basic Science" dimension, and yields 10% of the explained variance. The USMA areas of concentration provide no groups for Biglan's "Living organism--nonliving" subject matter dimension.

The centroids on the first two discriminant functions for the four groups could conform to Guttman's 1954 criteria for a circumplex, but with only four points one cannot tell.

The AY 79-80 Study

a. Combining the Classes of 1978 and 1979 made possible "sharpening-up" the four Area Interest Profile Similarity Scales (IPSS) as well as the development of "Field of Study" IPSS equations. The mean IPSS scores made by the "high-half" and "low-half" groups presented the same general picture as that shown in Table 1 for area interest based scales. In developing these scales, a higher minimal level of significance was possible, and earlier "General Interest SCII scales were combined with the Occupation Interest scales to produce only one score per group. The result was a computer-produced profile for each cadet in the Class of 1982 which was distributed and used by their Academic counselors when providing guidance on the choice of field of study. (For a more detailed technical report, see Bridges, 1981. For less technical documentation, see Shuford, 1980.)

b. More definitive information on the basic dimensions of the USMA curriculum resulted from the two equations for an Applied Science Raw Score (APSIRSC) and a Non-Physical Science Raw Score (NPSCIRSC), based solely on cadets' discriminating interest patterns. Correlations were computed between cadets' scores on these two scales and their IPSS scores for their own graduating area and field. The two were also correlated with the dummy variable for each of 36 area/field groups. The results are depicted in Figure 1. These data and an ISS intercorrelation matrix substantiates conformance to Guttman's circumplex criteria and to Biglan's model.

Figure 1 indicates that much of the basic simple structure of USMA's Areas of Concentration and Fields of Study seem to be described by the extent to which each is related to both an "Applied Science--Pure Science" dimension and a "Non-Physical Science--Physical Science" dimension. The locations for area dummy variables (01 to 05) are largely as expected, and dummy variables for their fields tend to cluster around them.

Two other characteristics warrant special comment. First, when the point plotted for each pair of dummy variable correlations is connected to the corresponding point for that group's ISS, the ray-like pattern depicts sharply the general similarity of the patterns of interrelationships for the two sets of variables. Second, the circular structure of the ISS pattern depicted in Figure 1 is known as a circumplex. The intercorrelations confirm that in general the closer the points, the higher the correlations between the ISS scores. Also, in accordance with Gutman's criterion (Gutman, 1954) the correlations between interest similarity scale scores tend to be negative for ISS's plotted directly across the circle from each other.

The basic structure of hte field ISS's clearly shows close conformance to their area's classifications in the Biglan model, with the single exception of the Economics field. The figure both provides further indication that the ISS's are valid and suggests further exploration of the use of these two dimensions to provide field-choice guidance to the cadets without even one "interpretative anomaly." A "Map of Fields" (a graph on which is plotted the centroids for each field) could be provided cadets together with their own APSCI and NPSCI scores. When the cadet plots his/her point on the "map," the fields which were closest to his/her own interest pattern would be clearly indicated. This might also be supplemented by a simple individual report of the cadet's discriminant scores for each field. These suggestions need to be checked further as the use of higher-order factors for practical individual

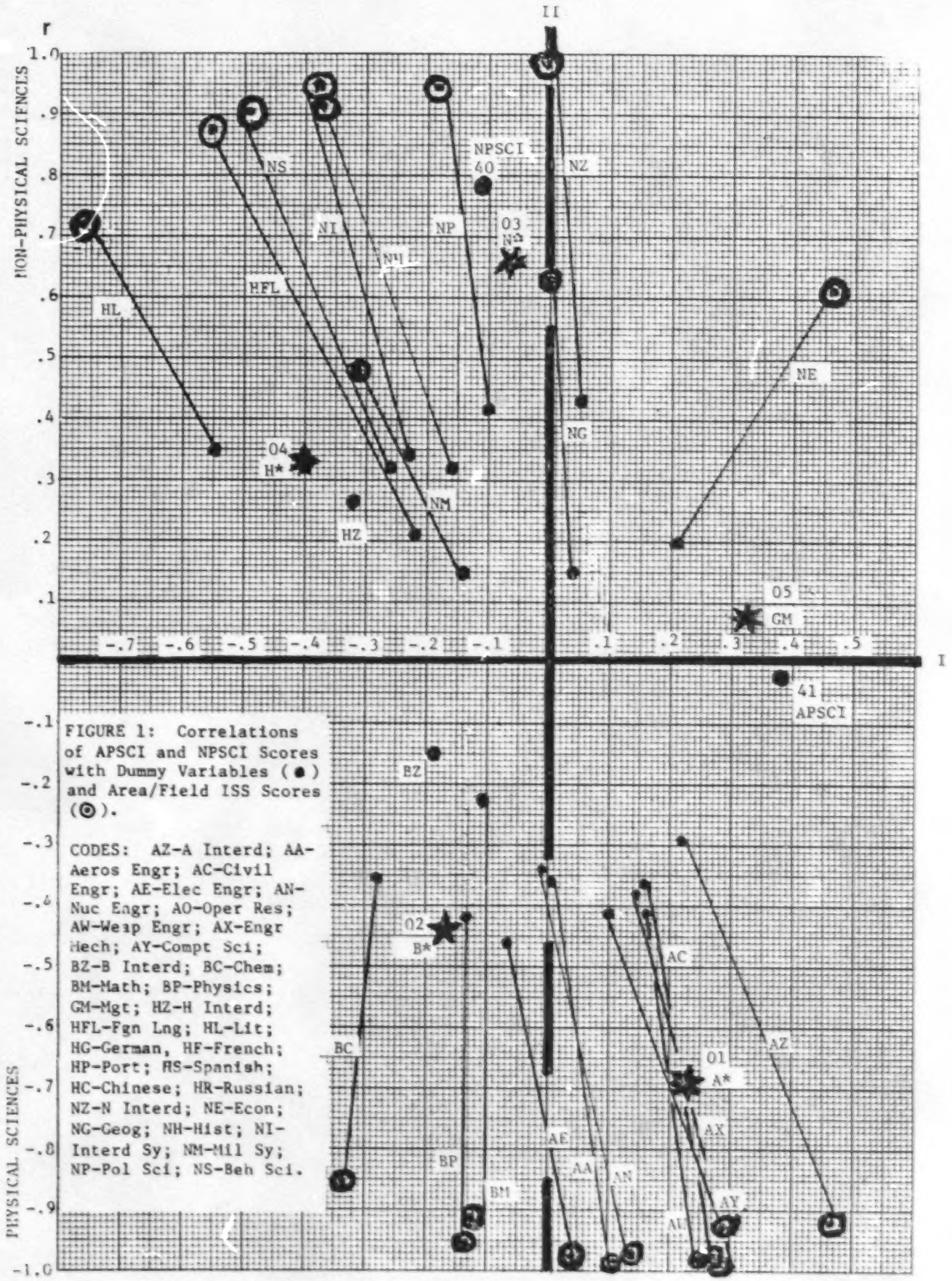

FIGURE 1: Correlations of APSCI and NPSCI Scores with Dummy Variables (●) and Area/Field ISS Scores (◎).

CODES: AZ-A Interd; AA-Aeros Engr; AC-Civil Engr; AE-Elec Engr; AN-Nuc Engr; AO-Oper Res; AW-Weap Engr; AX-Engr Mech; AY-Compt Sci; BZ-B Interd; BC-Chem; BM-Math; BP-Physics; GM-Mgt; HZ-H Interd; HFL-Fgn Lng; HL-Lit; HG-German, HF-French; HP-Port; HS-Spanish; HC-Chinese; HR-Russian; NZ-N Interd; NE-Econ; NG-Geog; NH-Hist; NI-Interd Sy; NM-Mil Sy; NP-Pol Sci; NS-Beh Sci.

prediction purposes often has been found to yield disappointing results--one reason for initially using it only as a backup procedure.

Incidentally, Army Service Branch IPSS scores developed from SCII scales for officers in the larger Service Branches also tend to form a circumplex. Factor analysis found two factors and oblique rotation indicated their negative correlation of -.52. The major dimension has Engineers, Ordnance, and Signal Corps at one end, and Transportation Corps and Quartermaster Corps at the other. It seems to be analogous to Biglan's established paradigm dimension. The second dimension has Military Intelligence at one end and Field Artillery at the other. This may be Biglan's "living organism--inanimate" dimension. It seems that the Army service branches studied do not have, as a whole, enough of the Applied-Pure differentiation for this dimension to show up in this factor analysis. None of the service branches stand out as "pure researchers."

The AY 80-81 Study

Addition of the cadets graduating in the Class of 1980 made possible the development of IPSS equations for additional fields of study, and the improvement of the eight field equations for which small interpretative anomalies had occurred previously. All interpretative anomalies have not been eliminated, but they have been reduced. High-half cadets in Physics and Computer Science still have a significantly higher mean IPSS for Mathematics than for their own field. Cadets in Literature still have a higher mean on Foreign Languages IPSS than on Literature IPSS. Campbell (1977) stated that for some unknown reason, a few anomalous occupation criterion groups still were found to typically make a higher score on another occupation scale than on their scale. Perhaps further study of these field IPSS anomalies can throw more light on this situation.

The resulting computer-produced profile, sample shown as Figure 2, was distributed to the cadets in the Class of 1983 by the counselor involved in their choice of a field of study.

General Comments

The interest similarity profiles have been reported, by both cadets and academic counselors, as contributing to increased satisfaction and success of cadets in choice of area of concentration and field of study. The recent report of the Evaluation team representing the Commission on Higher Education of the Middle States Association of Colleges and Schools stated as follows:

"We think the academic advising process is outstanding. . . . The recent development which permits the Company Academic Counselor to use information developed through the Strong-Campbell inventory instrument is to be commended. This development, which requires far less training than the use of the inventory itself, enables the cadet to know how his or her interests correlate with the interests of those who have been successful in the various concentrations. This is a very helpful advising tool."

Conclusions

The scales developed by this approach provide valid and useful measures of the similarity of an individual to a criterion group on important group discriminating characteristics.

ISS PROFILE: AREA/FIELD INTEREST SIMILARITY SCALE SCORES

**CADET
SSN#
COMPANY

WHEN SELECTING YOUR FIELD OF STUDY THE INTEREST-BASED SCORES REPORTED BELOW SHOULD BE CONSIDERED, AS SHOULD YOUR PAST SUCCESS IN FIELD-RELATED COURSES, OTHER EVIDENCE OF YOUR RELEVANT SPECIAL ABILITIES, AND YOUR PERSONAL GOALS.

THESE INTEREST-BASED SCORES WERE DERIVED FROM YOUR RESPONSES TO THE STRONG-CAMPBELL INTEREST INVENTORY (SCII). THEY MAY BE INTERPRETED IN A MANNER SIMILAR TO THE SCORES ON YOUR SCII PROFILE. THESE SCORES, HOWEVER, INDICATE THE SIMILARITY BETWEEN YOUR INTEREST PATTERNS AND THE INTEREST PATTERNS OF CADETS GRADUATED IN THE UPPER HALF OF THEIR AREA OF CONCENTRATION OR FIELD OF STUDY. THE AVERAGE ISS SCORE FOR CADETS WHO DID WELL IN A PARTICULAR AREA OR FIELD IS 50.

IF YOUR SCORE FOR A PARTICULAR SCALE IS 45 OR HIGHER, THEN YOUR INTEREST PATTERN IS VERY SIMILAR TO THOSE OF CADETS WHO WERE SUCCESSFUL IN THAT AREA OR FIELD. THE HIGHER YOUR SCORE, THE MORE SIMILAR YOUR INTERESTS ARE TO THOSE OF SUCCESSFUL CADETS. THE LOWER YOUR SCORE THE LESS SIMILAR YOUR INTERESTS. IN FACT VERY LOW SCORES INDICATE DISSIMILARITY. **** IF YOUR SCORES FOR TWO OR MORE AREAS/FIELDS ARE FAIRLY CLOSE TOGETHER (SAY WITHIN 4 OR 5 POINTS), IT MEANS THAT YOUR INTEREST PATTERNS ARE ABOUT THE SAME FOR THOSE AREAS OR FIELDS. WHEN THE DIFFERENCE IS 5 OR MORE POINTS, YOU CAN HAVE CONSIDERABLE CONFIDENCE THAT YOUR INTEREST PATTERN IS MORE LIKE THAT OF CADETS IN THE AREA OR FIELD HAVING THE HIGHER SCORE. **** IF YOU SCORE HIGH IN AN AREA AND IN FIELDS WITHIN THAT AREA, YOU CAN HAVE MORE CONFIDENCE THAT THOSE AREAS/FIELDS WILL MATCH YOUR INTERESTS. PAY PARTICULAR ATTENTION TO THE FIELD WITH YOUR SIGNIFICANTLY HIGHER ISS(S) AND TO ANY FIELDS WITH SCORES ABOVE 45.

AREA/FIELD	CODE	INTEREST SIMILARITY SCORE	20	30	40	45	50	60	70	80
			.....)(VERY.LOW)(...LOW..)(.AVERAGE)(..HIGH..)(VERY.HI.)(.....							
*APPLIED SCIENCES AND ENGINEERING	A*	(51)					A*			
**"A" & "E" INTERDISC FIELD	A	56						A		
**AEROSPACE ENGINEERING	AA	49					AA			
**CIVIL ENGINEERING	AC	54						AC		
**COMPUTER SCIENCE	AY	47					AY			
**ELECTRICAL ENGINEERING	AE	43				AE				
**ENGINEERING MECHANICS	AX	52						AX		
**NUCLEAR ENGINEERING	AN	50					AN			
**OPERATIONS RESEARCH	AO	45				AO				
**WEAPON SYSTEMS(MECHANICAL) ENGR	AW	47					AW			
*BASIC SCIENCES	B*	(42)				B*				
**"BS" INTERDISCIPLINARY	B	54						B		
**CHEMISTRY	BC	40			BC					
**MATHEMATICS	BM	47					BM			
**PHYSICS	BP	32		BP						
*HUMANITIES	H*	(26)		H*						
**"H" INTERDISCIPLINARY	H	15	H							
**FOREIGN LANGUAGES (SEL OR DBL)	FL	32		FL						
**LITERATURE	HL	17	HL							
*NATIONAL SECURITY-PUBLIC AFFAIRS	N*	(31)		N*						
**INTERDISCIPLINARY	N	33		N						
**BEHAVIORAL SCIENCE	NS	28		NS						
**ECONOMICS	NE	37			NE					
**GEOGRAPHY	NG	34		NG						
**INTERNATIONAL AFFAIRS	NI	22	NI							
**MILITARY STUDIES	NN	24	NN							
**MODERN HISTORY	NH	15	NH							
**POLITICAL SCIENCE	NP	25	NP							
*MANAGEMENT(INTERDISCIPLINARY)	G*	(44)				G*				
			.....)(VERY.LOW)(...LOW..)(.AVERAGE)(..HIGH)(VERY.HI.)(.....							

FIGURE 2

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